Trend Study 16B-14-02

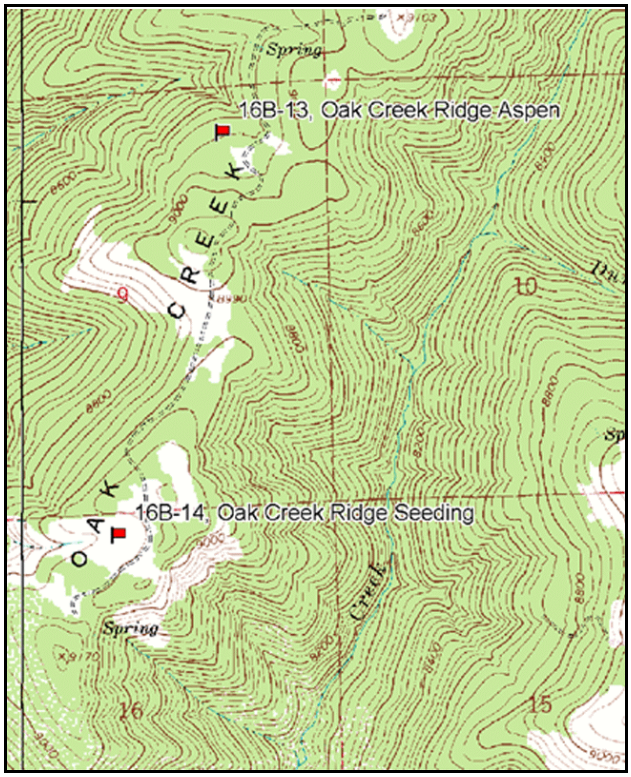
Study site name: Oak Creek Ridge Seeding . Vegetation type: Dry Meadow .

Compass bearing: frequency baseline 254 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

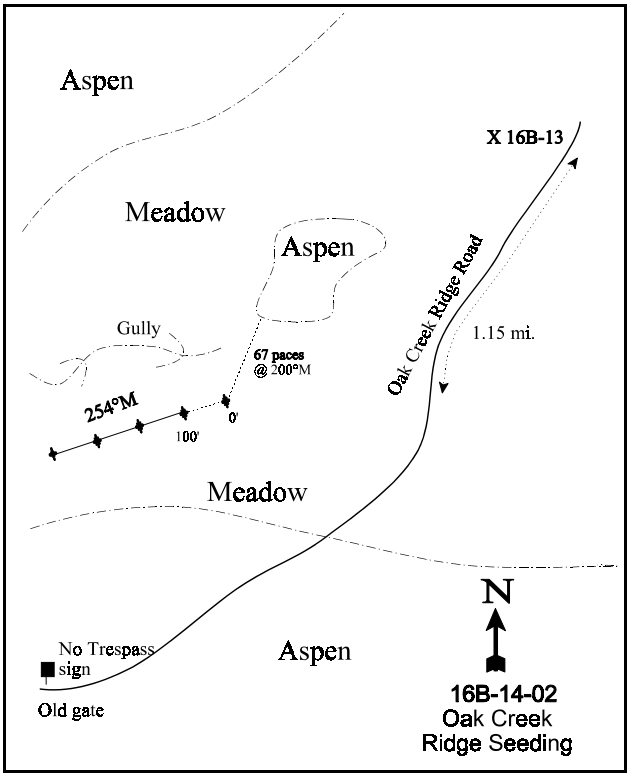
LOCATION DESCRIPTION

From the intersection of Highways 91 and 31 in Fairview, take Highway 31 eastward 8.4 miles to Skyline Drive. Go north on Skyline Drive for approximately 6 miles and turn left towards the Dry Creek Stock Driveway. Go 0.35 miles to an intersection, continue straight for mile to the fence marking the boundary of the Oak Creek Ridge Allotment. Drive 2.4 miles to the witness post for study #16B-13. Continue on the main road 1.15 miles to a large meadow. This is the last meadow on the ridge. The 0' baseline stake is about 100 yards into the meadow and is marked by browse tag #9089. (From the edge of the aspen patch the 0-foot baseline stake is 67 paces away at an azimuth of 200 degrees magnetic). Do not confuse the transect with a U.S.F.S. study that runs southwest/northeast and is marked by orange and green fenceposts.



Map Name: Fairview Lakes

Township 13S , Range 5E , Section 16



Diagrammatic Sketch

GPS: NAD 27, UTM 12S 4393904 N 468205 E

DISCUSSION

Oak Creek Ridge Seeding - Trend Study No. 16B-14

The Oak Creek Ridge Seeding study samples one of the seeded meadows on Oak Creek Ridge. Located on the end of the ridge, it is the largest seeded meadow and appeared to have better grass establishment than some of the other meadows when first sampled in 1989. Previously, these aspen openings had an abundance of tarweed. These areas were treated in the fall of 1988 to remove the weeds, then seeded. This meadow is also monitored by a Forest Service photo-point transect. The study is on a 5% slope with a westerly aspect and an elevation of 9,050 feet. Pellet group data in 1997 indicated moderately low elk and cattle use, with light use by deer. Pellet group transect data taken in 2002 estimated 2 deer days use/acre (5 ddu/ha) and 7 elk days use/acre (17 edu/ha). Cattle use was fairly high at an estimated 43 days use/acre (106 cdu/ha). A nearby landowner reported that 140 head of cattle used the site for over 90 days in 1996.

Soils are deep with an effective rooting depth of nearly 25 inches. Soil texture is a clay with a slightly acidic pH (6.5). Due to the patchy distribution of the newly seeded grasses and the abundance of annuals, protective ground cover was limited in 1989. Litter was sparse, but basal vegetative cover was moderately high at 13%, leaving 84% bare soil. There were definite signs of erosion across the meadow and down the adjacent gully in 1989. Sheet erosion and small rills occurred on the gentle slope. During the 1997 reading, percent bare ground declined to 42% and litter increased to 12%. Ground cover estimates from the 2002 sample indicate slight increases in both litter and bare ground, but litter remains limited and bare soil is still high. Gopher activity is prominent on the sight. The erosion condition class assessment was determined as stable in 2002. The erosion is minimal due to the gentle terrain.

The meadow is surrounded by mature aspen stands which have an understory of native grasses and coneflower. The browse component in the meadow itself is virtually non-existent with only one mature snowberry plant being sampled in 2002. This area should climatically fall into the tall forb community type. In 1989, the seeded species were not yet well-established. There was ample space for germination and the spread of rhizomatous species. The intermediate wheatgrass that had established were large and robust, while some of the grasses had been recently grazed. In 1997, seeded species were more abundant with sum of nested frequency for grasses doubling. Intermediate wheatgrass, smooth brome, and orchard grass were the dominant species in 1997, combining to produce 97% of the grass cover. In 2002, intermediate wheatgrass significantly increased in nested frequency and increased in cover by nearly ninefold. However, due to drought conditions, smooth brome and orchard grass both significantly declined in sum of nested frequency in 2002. It was noted in 2002 that grasses had good stature and vigor with many individuals producing seed.

Like the nearby Oak Creek Aspen site, forbs are the dominant vegetation type, especially prior to the 2002 drought season. Twenty-five species were encountered in 1997, and 23 in 2002. Forbs produced nearly 30% cover or 75% of the total vegetative cover in 1997. With drought conditions in 2002, forbs remained stable in sum of nested frequency, but their contribution of cover declined by nearly half. The stability in forb frequency during a drought year is very positive. Although forbs are abundant, composition is extremely poor. Tarweed, the reason the meadow was treated to start with, is still abundant. This species increased in frequency between 1989 and 1997, but declined between 1997 and 2002 because of drought. Tarweed is uniformly distributed throughout the site as it was sampled in 98% and 87% of the quadrats in 1997 and 2002 respectively. Cover of tarweed, which accounted for nearly half of the total vegetation cover in 1997, was greatly reduced in 2002 (18% to 3%). Other common species include thistle, pacific aster, and hounds tongue. Seeded forbs are uncommon.

1989 APPARENT TREND ASSESSMENT

Trends appear upward as the seeded grasses are increasing, resulting in additional litter and soil protection. With adequate precipitation and proper grazing management, the grasses should out-compete annual species. Browse is not important to this site and will always be an insignificant component.

1997 TREND ASSESSMENT

The soil trend is up with percent bare ground declining from 84% to 42%. Litter cover has also increased and the herbaceous cover appears to adequately protect the soil from severe erosion. However, the ratio of bare soil to protective ground cover is only 1:2. For good protection, this ratio should be at least 1:3. This should improve with time. Browse are absent and not an important component of this summer range. Trend for the herbaceous understory is up for grasses but down for forbs due to the dominance of tarweed. It currently accounts for nearly half (46%) of the vegetative cover. Overall trend is considered down slightly.

TREND ASSESSMENT
soil - up (5)
browse - absent and not important here (N/A)
herbaceous understory - down slightly and dominated by tarweed (2)

2002 TREND ASSESSMENT

Trend for soil is stable, but soils remain in less than ideal condition with relatively low litter cover and high amounts of bare soil. Erosion is minimal. Browse remains limited on the site, but is not an important component on this high elevation summer range. Trend for the herbaceous understory is considered stable, although composition remains poor. Intermediate wheatgrass is the dominant species by far. With drought conditions, other more mesic grasses such as smooth brome and orchard grass both declined. Sum of nested frequency for forbs remained stable even with drought which is a positive outcome. Perennial forbs on most of the lower elevation studies in the unit declined in 2002 because of the dry conditions. Tarweed significantly declined in frequency as well.

TREND ASSESSMENT
soil - stable (3)
browse - no trend (N/A)
herbaceous understory - stable (3)

HERBACEOUS TRENDS --
Herd unit 16B, Study no: 14

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'89	'97	'02	'89	'97	'02	'97	'02
G	Agropyron cristatum	-	-	1	-	-	1	-	.00
G	Agropyron intermedium	a87	b99	256	42	42	85	2.26	19.62
G	Agropyron trachycaulum	a-	b12	c54	-	5	25	.22	1.70
G	Bromus carinatus	-	-	4	-	-	2	-	.18
G	Bromus inermis	a-	c100	b36	-	40	13	3.39	1.58
G	Bromus japonicus (a)	1	-	-	1	-	-	-	-
G	Bromus spp.	1	2	-	1	1	-	.03	-
G	Dactylis glomerata	a-	c116	b25	-	51	11	3.59	.55
G	Lolium perenne	b26	a-	a-	12	-	-	-	-

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'89	'97	'02	'89	'97	'02	'97	'02
G	Phleum pratense	$_{b}$42	$_{a}$8	$_{a}$13	22	4	4	.07	.59
G	Poa pratensis	-	-	3	-	-	1	-	.03
G	Stipa lettermani	-	-	4	-	-	2	-	.18
Total for Annual Grasses		1	0	0	1	0	0	0	0
Total for Perennial Grasses		156	337	396	77	143	144	9.57	24.45
Total for Grasses		157	337	396	78	143	144	9.57	24.45
F	Achillea millefolium	$_{a}$2	$_{ab}$6	$_{b}$12	1	3	5	.33	.86
F	Agoseris glauca	$_{a}$-	$_{b}$49	$_{b}$56	-	17	23	.57	1.10
F	Arabis spp.	-	-	4	-	-	2	-	.06
F	Aster chilensis	$_{a}$-	$_{a}$19	40	-	6	14	1.97	3.32
F	Chenopodium album (a)	-	3	-	-	1	-	.00	-
F	Cirsium undulatum	$_{a}$1	$_{c}$124	$_{b}$66	1	57	33	2.29	.63
F	Claytonia lanceolata	$_{a}$-	$_{b}$174	$_{b}$206	-	59	68	1.50	1.97
F	Collomia linearis (a)	-	$_{a}$-	$_{b}$82	-	-	35	-	.40
F	Cynoglossum officinale	$_{a}$10	$_{c}$113	$_{b}$72	8	54	36	2.35	1.28
F	Descurainia californica	$_{b}$14	$_{a}$-	$_{a}$-	10	-	-	-	-
F	Epilobium brachycarpum (a)	-	$_{a}$-	$_{b}$138	-	-	54	-	1.08
F	Epilobium spp.	2	-	-	2	-	-	-	-
F	Eriogonum caespitosum	4	6	-	1	3	-	.16	-
F	Erigeron eatonii	$_{a}$-	$_{a}$3	$_{b}$22	-	1	11	.00	.56
F	Eriogonum racemosum	-	-	4	-	-	1	-	.00
F	Galium aparine (a)	-	3	-	-	1	-	.00	-
F	Geranium spp.	-	3	1	-	1	1	.00	.03
F	Hedysarum boreale	6	-	-	3	-	-	-	-
F	Lactuca serriola	8	-	-	4	-	-	-	-
F	Linum lewisii	7	2	1	5	2	1	.16	.06
F	Machaeranthera spp	-	-	3	-	-	1	-	.03
F	Madia glomerata (a)	$_{a}$25	$_{c}$363	$_{b}$262	16	98	87	17.90	3.40
F	Mertensia ciliata	-	3	-	-	1	-	.00	-
F	Melilotus officinalis	$_{b}$8	$_{a}$-	$_{a}$-	5	-	-	-	-
F	Medicago sativa	-	1	-	-	1	-	.15	-
F	Oenethera flava	$_{b}$11	$_{a}$3	$_{ab}$10	8	1	6	.00	.28
F	Penstemon spp.	-	-	10	-	-	3	.00	.21
F	Polygonum douglasii (a)	-	$_{b}$81	$_{a}$5	-	25	2	.27	.01
F	Senecio multilobatus	1	-	-	1	-	-	-	-
F	Stellaria jamesiana	-	2	-	-	2	-	.01	-
F	Taraxacum officinale	-	7	4	-	3	2	.21	.06
F	Tragopogon dubius	1	9	9	1	4	5	.07	.05

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'89	'97	'02	'89	'97	'02	'97	'02
F	Unknown forb-annual (a)	-	3	-	-	1	-	.15	-
F	Vicia americana	-	12	3	-	4	2	.02	.15
F	Viguiera multiflora	$_{a}$-	$_{b}$23	$_{b}$23	-	8	11	.61	.71
F	Viola spp.	$_{a}$6	$_{b}$40	$_{a}$17	5	24	9	.39	.12
Total for Annual Forbs		25	453	487	16	126	178	18.34	4.89
Total for Perennial Forbs		81	599	563	55	251	234	10.85	11.52
Total for Forbs		106	1052	1050	71	377	412	29.19	16.42

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Herd unit 16B, Study no: 14

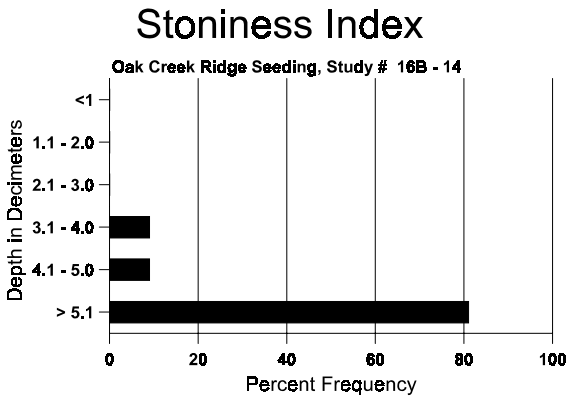
Type	Species	Strip Frequency		Average Cover %	
		'97	'02	'97	'02
B	Symphoricarpos oreophilus	0	1	.00	-
Total for Browse		0	1	0.00	0

BASIC COVER --
Herd unit 16B, Study no: 14

Cover Type	Nested Frequency		Average Cover %		
	'97	'02	'89	'97	'02
Vegetation	384	367	13.25	39.88	41.42
Rock	104	85	1.50	.70	2.25
Pavement	173	133	0	.58	.58
Litter	356	336	1.50	11.58	16.60
Cryptogams	-	-	0	0	0
Bare Ground	366	360	83.75	42.25	53.04

SOIL ANALYSIS DATA --
Herd Unit 16B, Study no: 14, Oak Creek Ridge Seeding

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
24.8	47.9 (17.7)	6.5	24.0	32.4	43.6	3.5	35.3	214.4	.4



PELLET GROUP FREQUENCY --
Herd unit 16B, Study no: 14

Type	Quadrat Frequency		Pellet Transect	
			Pellet Groups per Acre	Days Use per Acre (ha)
	'97	'02	'02	'02
Elk	12	1	87	7 (17)
Deer	1	2	26	2 (5)
Cattle	9	17	513	43 (106)

BROWSE CHARACTERISTICS --
Herd unit 16B, Study no: 14

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Symphoricarpos oreophilus																		
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20	11	15	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'89	00%	00%	00%
'97	00%	00%	00%
'02	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'89	0	Dec:	-
	'97	0		-
	'02	20		-